

FE216

Plot filed in tube H-9484

Diagram No. 8252-2

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

(HYDROGRAPHIC)

Type of Survey ... Field Examination

Field No. DA-2.5-1-75

Office No. FE-216 (1975)

LOCALITY

State Alaska

General Locality ... Peril Strait

Locality Vicinity of Sergius Narrows

1975

CHIEF OF PARTY
M.H. Fleming

LIBRARY & ARCHIVES

DATE August 2, 1976

☆ U.S. GOV. PRINTING OFFICE: 1976-669-441

NOTE: A new system for registering Field Examinations (FE's) was established in 1980. All FE's are now consecutively numbered as shown hereon. The date shown in the new format is the actual date of survey. This material was previously registered as;

FE No.2 1976

FE216

FE No. 2 1976

Diag. Cht. No. 8252-2.

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT (HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC
Field No. DA-2.5-1-75
Office No. FE No. 2 (1976)

LOCALITY

State ALASKA
General Locality ... PERIL STRAIT
Locality VICINITY OF SERGIUS NARROWS

1975

CHIEF OF PARTY

M. H. Fleming

LIBRARY & ARCHIVES

DATE 8/2/76

☆ U.S. GOV. PRINTING OFFICE: 1975-668-353

Plot filed in tube H-9484

Area 6
Chart:
8252
8248

8002 } N.C. area
8500 } cleared
500 }

HYDROGRAPHIC TITLE SHEET

FE 2 (1976)
(SP-PMC-7-DA-75)INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form,
filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

DA-5-1-75

State ALASKAGeneral locality Peril StraitLocality *Vicinity of*
1 Sergius NarrowsScale *1:2500*
~~1:5,000~~ Date of survey October 1975Instructions dated October 6, 1975 Project No. SP-PMC-7-DA-75Vessel NOAA Ship DAVIDSON Launch DA-1 (3130)Chief of party Cdr. M. H. Fleming, NOAASurveyed by Lcdr Wagner, Lt Eilers, Lt(jg) Sarb, Lt(jg) Tennesen, Ens Huestis,
Ens KenneySoundings taken by echo sounder, hand lead, pole Ross 5000 S/N 1048Graphic record scaled by DigitizedGraphic record checked by Ship's PersonnelProtracted by Verification Automated plot by *Xynerics*
PMC Plotter~~Soundings penciled~~ by R. D. LynnSoundings in ~~Narrows~~ feet at ~~MLLW~~ MLLW Observed TidesREMARKS: Survey Time Zone: 000° GMTMean Survey Longitude: 135° 38' 15" W*Applied to stds 9/2/76*
*CS**critical depths*
*checked by RHCarsens**Printouts and*
position overlay filed with
fgms.

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SURVEY

FE 2 (1976)
(SP-PMC-7-DA-75)

DA-5-1-75

SCALE.....1:5,000

YEAR.....1975

VESSEL.....NOAA SHIP DAVIDSON (CSS-31)

CHIEF OF PARTY.....M.H. FLEMING CDR, NOAA



A. PROJECT

This special investigation survey DA-5-1-75 was conducted under project instructions SP-PMC-7-DA-75, Special Investigation, SERGUIS NARROWS, PERIL STRAIT, ALASKA, dated October 6, 1975. A PMC radio message redefined leveling requirements. A copy of this message is appended. There were no supplements to these instructions. No depth unit was prescribed. This survey was run in feet for better bottom definition.

B. AREA SURVEYED

The project area is that part of Peril Strait known as Serguis Narrows. The area is bounded on the northwest by Point Sinbad, the northeast by Serguis Point, the east by Rapids Island and the southeast by Pinta Head. The primary investigation area is the immediate area surrounding East and West Francis Rocks. A secondary investigation of the Narrows Channel is included.

C. SOUNDING VESSELS

Launch DA-1 (3131) is the single sounding vessel used in this survey. Color coding is used in data recording and preliminary computer plots. The colors are as follows:

<u>Color</u>	<u>Use</u>
Red	Position and Sounding, Electronic
Green	Vessel Track, Electronic
Blue	Position, Visual

All soundings on the smooth field sheet are in black.

D. SOUNDING EQUIPMENT

DA-1 is equipped with a Ross FINELINE fathometer, Model 5000. The

serial numbers are as follows:

<u>Equipment</u>	<u>Serial Number</u>
Recorder	1048
Digitizer	1048
R/T Unit	1036

Sounding depths ranged from 5 to 215 feet. No fathometer problems were encountered during this survey.

DA-1 used the digitizing fathometer in conjunction with an ASI Logger-Teletype data acquisition system. Daily phase calibrations and bar checks were obtained.

All fathograms were scanned for correct depths. Peaks and deeps were inserted as necessary. All sounding additions and revisions were incorporated into the master tapes.

No Nansen or Martek casts were made. TRA and velocity correctors were compiled using the daily bar checks. High currents assured complete water column mixing and permitted a linear extrapolation of bar check data. Refer to the attached velocity correctors note.

Velocity correctors were applied to the soundings on the smooth field sheet.

E. BOATSHEETS

All field sheets for this survey were prepared using the DAVIDSON's HYDROPLOT system at the scale 1:5,000. Two sheets were used to plot field soundings at this scale: one for main scheme work and one for

development hydro and crosslines. Enlargements at 1:2,500 scale were made to reduce congestion caused by seven meter line spacing over development areas. PDP8/E computer (s/n PR03010714) and Complot plotter (s/n 5445.5) were linked for computation and plotting of the field sheets.

F. STATION CONTROL

Due to the nature of this survey, existing geodetic control was recovered and geodetic positions used as published without field verification.

ILAND RML, 1950, was used as an electronic control station. Its position was computed using the published data. The station RML distance used was 29.90 feet, confirmed by field taping.

G. POSITION CONTROL

This survey was visually controlled in compliance with the project instructions; however, MINI-RANGER data was logged simultaneously. The visual data was logged in a sounding volume while the MINI-RANGER data was logged on-line using the ASI system. This simultaneous logging scheme was used to derive a field comparison of visual vs MINI-RANGER on the scale of 1:5,000 and 1:2,500. The equipment used is as follows:

<u>Equipment</u>	<u>Serial Number</u>
MINI-RANGER R/T	710
MINI-RANGER Console	719
SEXTANT	901
SEXTANT	854
SEXTANT	87

MINI-RANGER baseline calibrations were made before and after the

survey. Twice daily calibrations were made to check the transponder correctors. The daily calibrations were made with a three-point sextant fix (with check angle) on two independent sets of signals. The results of the daily calibrations were within one meter of the baseline figures and meet the accuracy requirements as specified in Section 4.4.3.2.2 of the Provisional Hydrographic Manual, Change No. 6, 8-8-75. Visual control for this survey was difficult due to the small area involved and proximity to signals. We feel MINI-RANGER data is better and should be used as the primary control system. Refer to the Electronic Control Note and Section Q. for further detail.

H. SHORELINE

No photogrammetric support was available for this survey. No shoreline was applied with the field smooth sheet, as it was not plotted on prior survey H-793Ø.

I. CROSSLINES

Crosslines are in very good agreement in depths exceeding 1ØØ feet (\pm 2 feet), and in excellent agreement in the shoaler depths (\pm 1 foot).

J. JUNCTIONS

Due to the nature of this survey, junctions with prior surveys were not required.

K. COMPARISON WITH PRIOR SURVEYS

The project instructions did not issue any formal pre-survey review items. This survey agreed to within \pm 1 foot with H-793Ø, PA-Ø5251, scale 1:5,ØØØ.

L. COMPARISON WITH CHART

The largest scale chart of the area is #17323, Salsbury Sound and Peril Strait, 6th ed., Dec. 7, 74, scale 1:40,000. The project area is shown as an inset at the scale 1:20,000. The charted 24-foot channel south of Serguis Point is now found to be clear to ¹⁵18 feet. This ¹⁵18-foot feature is located at the southern boundary just southwest of Buoy "8".

A Notice to Mariners Information Sheet describing this shoal has been forwarded. Refer to the attached copy. Only two soundings of the West Francis Rock area are charted. They agree with this survey; however, this survey shows a new least depth of ¹⁶20 feet at about 57°24.3'N, 135°38.2'W following a one-hour ^{16 rejected see FF 2 (1976)} fathometer/leadline search. ^{22' on detached position}

The charted soundings of the East Francis Rock agree with this survey.

M. ADEQUACY OF SURVEY

This survey is complete as specified in the project instructions and is adequate to supersede prior surveys for charting.

All fathograms have been scanned for peaks and deeps with the appropriate changes applied to the master tapes.

N. AIDS TO NAVIGATION

The Serguis Narrows Light, 1950, is the single fixed navigational aid in the project area. Its location was not field verified. No Form 76-40's were supplied or submitted for this survey. Two buoys

N'6', West Francis Rock and N'8', Serguis Narrows Channel were located and do not agree with charted positions. They are D.P.'s 9601 and 9603, respectively. Buoy's N'6' and N'8' were found to be 45 meters North, 65 meters West and 22 meters South, 16 meters West of their charted positions respectively. A Local Notice to Mariners Marine Information and Suggestion Sheet regarding the new locations has been submitted.

O. STATISTICS

The statistics for this survey reflect the simultaneous electronic and visual hydrography:

Sounding Lines	=	52.6 L.M.
Crosslines	=	5.0 L.M.
Positions	=	1060
%Crosslines	=	9.5%
Survey Area	=	0.6 sq. mi.

P. MISCELLANEOUS

The project instructions specified that a tide gage be installed at the previous site 57°24'N, 135°37'W (approx). This location is in the Narrows itself. Because of the strong currents, an obvious datum difference was noted in the principal area of investigation. A second gage was then located at Point Sinbad. See Field Tide Note for further details.

Wire drag operations were not carried out because of the inappropriate current conditions. The turbulent currents around West Francis Rock ("STRONG CURRENTS" and "SWIRLS" are charted) would not allow drag boats to maintain sufficient tension on the ground cable to obtain a valid clearance depth.

Investigations were performed to determine the least depth of West Francis Rock and the ¹⁵~~18~~-foot sounding on the southern boundary of Serguis Narrows Channel.

WEST FRANCIS ROCK

On October 18, 1975, DA-1 made a one-hour fathometer/leadline search of West Francis Rock to determine its least depth. A pattern of 5 meter MINI-RANGER arcs was run over the area. When a shoal depth was found, a MINI-RANGER fix was logged. Pattern values for the least depths were determined. The launch then returned to these locations and began a localized search. Many simultaneous MINI-RANGER and sextant fixes with check angle were taken. The least depth was obtained at D.P. 96²~~01~~ and was logged. The fathometer/leadline depths disagreed. The leadline depth was 35 feet while the fathometer depth (digitized) ranged from 20 to 30 feet. A visual check of the bottom was made by the OIC who, ^{28 shown in SD 901,} using a diving face mask, hung over the side to view the bottom. The following is a description of the area:

West Francis Rock is not really a rock, rather it is a rocky reef. The reef is grown over with a bed of Feather Boa Kelp (genus Egietia), which obscures the bottom. This kelp extended 5 to 10 feet above the bottom at time of observation. Boulders of about 2-3 foot diameter are scattered about and light colored patches were seen which appeared to be sand. The bottom is irregular in texture and the vertical displacement of the boulders, bottom, and kelp was not readily discernable from the surface.

During leadline searches, the leadline appeared to work along the general bottom and could not be placed atop rubble. Repeated attempts resulted in similar soundings. A leadline check was made on both sides of the launch with approximate agreement. The digitizer recorded depths appeared to be kelp returns. A depth was scaled off the analog trace at what appeared to be the bottom, i.e., a consistent, solid trace. This scaled depth reduces to ¹⁶ ~~20~~ feet. ^{after 16 rejected} ^{see following paragraph.} ^{RE 3 (1976)} ~~and agrees well with minimum depth obtained in the TRICK, NYMAN, and HAYES Survey conducted shortly before our arrival.~~

The Ross System is not well suited to fathometer searches in kelp as kelp reflects very well at high frequencies obscuring the true bottom. A Raytheon 723 System might have penetrated kelp for a better bottom return, but was not available.

A copy of the hydrographic survey performed by TRICK, NYMAN, and HAYES, dated October 8, 1975, was made available to the DAVIDSON through the Commander, Seventeenth Coast Guard District, following our return to Seattle. This survey was visually controlled by transit intersections. The survey sheet was plotted using state plane coordinates (ALASKA ZONE 1). A "beam sweep" was made of West Francis Rock but the results are not obvious or conclusive. Beam sweep contacts are plotted but the findings were not available. The stations RAPIDS and LIGHT used for this survey are not described nor is position data given. No valid field comparison is possible with available TRICK, NYMAN, and HAYES data. The soundings on the contract survey are reduced for predicted tides. The reducers may

not be correct because of the observed differences of real and predicted tides as determined by the DAVIDSON.

It should be noted that SP-PMC-7-DA-75 has not produced conclusive evidence that the least depth obtained for West Francis Rock is indeed the least depth. The only way to certify the clear depth would be to view the reef on its own level, i.e. by diver investigation. Unfortunately, the project instructions forbade the use of divers.

SERGUIS NARROWS CHANNEL

Hydrography run in Serguis Narrows discovered an ¹⁵18-foot rock shoal (D.P. 9604, Day 292). This shoal is located southwest of Buoy "8" and marks the southern edge of the channel. The least depth was determined after a one-hour fathometer search. No leadline comparison was possible because of the 3-knot current. A simultaneous MINI-RANGER and visual fix (with check angle) was taken with agreement of 2 meters. Refer to the attached Notice to Mariners Information Sheet submitted for this shoal.

Q. RECOMMENDATIONS

It is recommended that the Point Sinbad tide data control the hydrography in and about East and West Francis Rocks and the Serguis Point tide gage control the Serguis Narrows hydrography. See field tide note.

It is recommended MINI-RANGER electronic positions be accepted for hydrographic control. This area was ideally suited to

MINI-RANGER. Careful field calibrations were made using simultaneous visual (with check) and MINI-RANGER fixes. These calibrations confirmed the stability and accuracy of MINI-RANGER data. Depth contours and crossline agreement are better with MINI-RANGER positions than with corresponding visual positions. Visual control was difficult due to the proximity of signals and relatively inexperienced personnel. Refer to the appended Electronic Control Note.

For future projects, it is recommended that the use of divers for visual verification of submarine features be left to the discretion of the Commanding Officer. The use of divers in this survey would have allowed an absolute determination and verification. Slack current conditions would have been safe for a dive on this feature. See October Monthly Diving Report.

R. REFERENCE TO REPORTS

Field Tide Note (attached)
Electronic Control Note (Attached)
Velocity Corrector Note (Attached)
October Monthly Diving Report
Notice to Mariners Information Report (Attached)

S. DATA PROCESSING TECHNIQUES

All field sheets were produced with a PDP8/e computer s/n PR-03010714 and Complot Plotter s/n 5445.5.

The Field Smooth Sheet is plotted at the scale 1:5,000 (DA-5-1-75) as prescribed in the project instructions. To reduce the congestion on the sheet, a second 1:5,000 sheet was made showing crosslines and developments (DA-5-1B-75). A supplementary field

sheet at scale 1:2,500 was produced so as to present the entire survey on one sheet.

Tide reducers, for plotting purposes, were computed by program AM500. The highs and lows were picked off observed tides and correctors computed. The reducers, therefore, are a sinusoidal approximation to the observed tide curve.

Tide reducers and velocity correctors were applied to the soundings on the Field Smooth Sheets DA-5-1A-75 and DA-5-1B-75.

The computer programs used to process this survey as as follows:

<u>Program</u>	<u>Version</u>
RK 201, GRID, SIGNAL and LATTICE PLOT	4-18-75
RK 211, RANGE/RANGE PLOT	8-16-74
RK 212, VISUAL STATION TABLE LOAD AND PLOT	4-1-75
RK 215, VISUAL POSITION and SOUNDING PLOT	8-16-74
RK 300, UTILITY COMPUTATIONS	5-22-75
RK 337, UNSCRAMBLER	8-8-74
AM 500, PREDICTED TIDES	11-10-72
AM 560, RANGE/RANGE CALIBRATION	6-6-73
AM 602, ELINORE	5-2-75

FIELD TIDE NOTE

SP-PMC-7-DA-75

SERGIUS NARROWS

Project instructions for SP-PMC-7-DA-75 called for installation of one tide gage at the previous survey's location near Shoal 2, a triangulation station in the Sergius Narrows Channel. As was immediately apparent upon arrival, one gage would not suffice to supply reducers for both the Narrows and the area of principal investigation, East and West Francis Rocks. The ship installed a second gage on Point Sinbad. The attached plot of hourly heights confirms suspected differences of up to two feet at the two locations. As levels could not be carried directly to the Sinbad tide gage, and the project was too short to determine MLLW by series observation, an alternative MLLW determination was made as described in the leveling section.

Boat sheet reductions of soundings for Sergius Narrows were based on Sitka predicted tides. However, since bench mark data was available for Sergius Narrows, real tides from our two tide gage installations were used for the Smooth Field Sheet. The tide correctors were obtained by scaling highs and lows from the marigram and then computing reducers with program AM501 with iteration limits set at 0.2 feet. All times of recorded tides are based on Greenwich Mean Time. Two Bristol Bubbler tide gages were installed in the project area. Location and operational periods were as follows:

<u>SITE</u>	<u>LOCATION</u>	<u>PERIOD</u>
SERGIUS NARROWS	57/24/ ^{33.5} 35.8 N 135/37/ ^{22.5} 22.5 W ^{34.0}	16 Oct 75 thru 10 Oct 75
POINT SINBAD	57/24/ ^{22.0} 21.0 N 135/39/ ^{02.0} 02.0 W ^{01.0}	16 Oct 75 thru 19 Oct 75

SERGIUS NARROWS Gage s/n 73A235 and staff were installed and began operating 16 Oct 75. Continuous good records were obtained from this gage. The anchor slipped once during the installation and was reset, resulting in the following staff/gage comparisons:

1700Z 16Oct75 thru 2147Z 16Oct75	0.0 on staff = 21.1 on the gage
2148Z 16Oct75 thru 2322Z 16Oct75	0.0 on staff = 24.4 on the gage
2323Z 16Oct75 thru 19Oct75	0.0 on staff = 18.2 on the gage

Published bench mark data and our leveling gave us the following: MLLW = 14.1 ft on gage (before anchor slipped); MLLW = 17.4 on gage (during short period before reset); and MLLW = 11.1 on gage (after anchor was reset).

POINT SINBAD Gage s/n 68A9333 was installed and began operating 16 Oct 75. Continuous good records were obtained from this gage. There was no staff installed at this station; however, waterline leveling established the following for the three benchmarks at the station:

BM 1 (Triangulation mark BOONE 2, 1950 = 18.8ft on gage
 BM 2 (RM #2) = 20.0ft on gage
 BM 3 (RM #1) = 21.1ft on gage

LEVELING

Sergius Narrows This station was leveled to three existing benchmarks. No changes in published benchmark elevation differences were found. The staff was bolted to solid rock, hence no staff movement was possible.

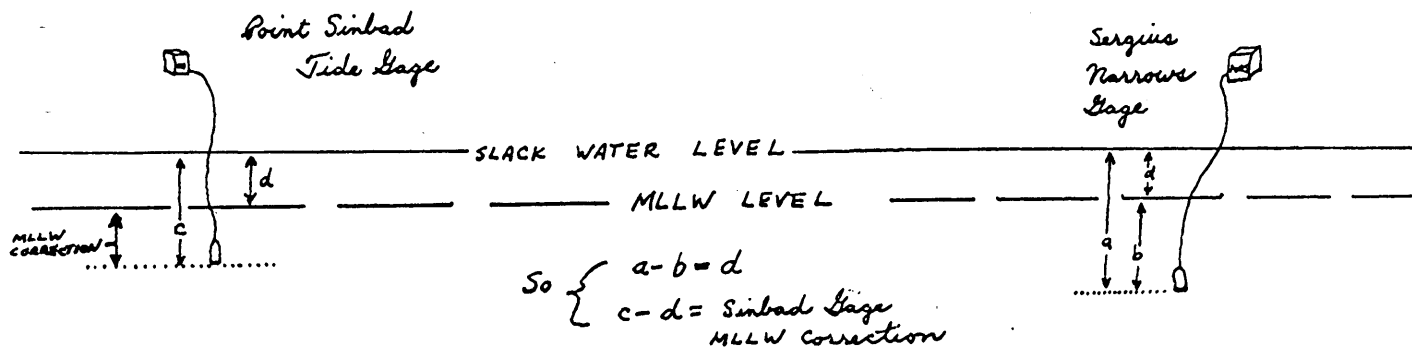
Point Sinbad This station was leveled to three benchmarks (a triangulation station disk and its two reference marks) on Point Sinbad. There was no staff installed here so a hand level and a Philadelphia rod were used to make gage-benchmark waterline comparisons. MLLW was also determined at this station from using the published Sergius Narrows datum and the following method:

In calculating MLLW on the Sinbad Tide Gage, we postulated that at slack water there was no elevation difference of the water surface level between the Sinbad and Sergius gages. This means that at any time "T" during apparent slack water, the difference between MLLW and observed water level at both gages is a constant.

So at each slack water time:

1. take Sergius gage reading (a)
2. subtract Sergius marigram/MLLW difference (b)
3. result is slack water level corrected to MLLW or (d)
4. take Sinbad gage reading (c)
5. subtract slack water level (d) from (c)

The result should be the MLLW correction for the Sinbad Gage



marigram. The mean of the eight MLLW determinations shown was 6.7 feet. Therefore 6.7ft = MLLW on the marigram for the Point Sinbad Tide Station. From this we were able to apply real tide correctors to the Field Smooth Sheet. Comparisons were made at high slack water. Predicted and observed tide curves were plotted for both gages. Equal water levels were observed on both real tide curves at times of predicted slack, lending credence to the initial assumption of no elevation difference during slack water.

ZONING

Point Sinbad Tide Station is recommended for obtaining final tide reducers west of a line between Sergius Point and Rapids Island. Sergius Narrows Tide Station records should be used for all tide reducers east of the above mentioned line. The accompanying chartlet illustrates where the tidal zoning breaks occur. It is also indicated on the SP-PMC-7-DA-75 Smooth Field Sheet submitted by the DAVIDSON.

135° 39' W

SERGIUS NARROWS

PERIL STRAIT
SP-PMC-7-DA-75

57° 25' N

135° 37'

57° 25' N

CHICHAGOF ISLAND

SERGIUS NARROWS
TIDE STATION

Shoal Pt

Sergius Channel

Sergius Pt

POINT SINBAD

POINT SINBAD
TIDE STATION

SUGGESTED ZONE
BOUNDARY BETWEEN
TIDE GAGES

Proteus
Rock

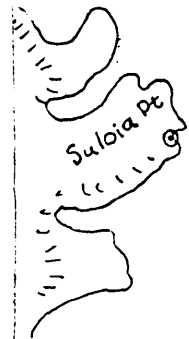
Rapids
I.

Crag I.

Pinta Head

BARANOF ISLAND

Sulola Pt



Time (GMT) DAY	Staff Readings (A) Sergius, (C) Pt. Sinbad	$a-b=\Delta$ ($b=11.1$)	$C-\Delta$ = MLLW corrector
2345 Z/ Oct. 16	Sergius (a) = 17.2 Pt. Sinbad (c) = 12.8	$17.2 - 11.1 = 6.1$	$12.8 - 6.1 = \underline{6.7}$
0554 Z/ Oct 17	(a) = 20.9 (c) = 16.5	$20.9 - 11.1 = 9.8$	$16.5 - 9.8 = \underline{6.7}$
1206 Z/ Oct 17.	(a) = 16.5 (c) = 12.1	$16.5 - 11.1 = 5.4$	$12.1 - 5.4 = \underline{6.7}$
1812 Z/ Oct 17	(a) = 21.6 (c) = 17.2	$21.6 - 11.1 = 10.5$	$17.2 - 10.5 = \underline{6.7}$
0025 Z/ Oct. 18	(a) = 16.3 (c) = 11.8	$16.3 - 11.1 = 5.2$	$11.8 - 5.2 = \underline{6.6}$
0634 Z/ Oct 18	(a) = 21.0 (c) = 16.6	$21.0 - 11.1 = 9.9$	$16.6 - 9.9 = \underline{6.7}$
1245 Z/ Oct. 18	(a) = 16.6 (c) = 12.2	$16.6 - 11.1 = 5.5$	$12.2 - 5.5 = \underline{6.7}$
1848 Z/ Oct. 18	(a) = 22.5 (c) = 18.2	$22.5 - 11.1 = 11.4$	$18.2 - 11.4 = \underline{6.8}$

The mean of the eight MLLW correctors shown above is 6.7. 0 marigram equals 6.7 MLLW.

ABSTRACT OF TIME OF HYDROGRAPHY OR FIELD EDIT

Fieldsheet is Complete/Incomplete

[illegible]

VELOCITY CORRECTOR NOTE

Peril Strait, Sergius Narrows
SP-PMC-7-DA-75
Special Investigation

Because of strong currents, small area, little (if any) slack water, and a high traffic density no NANSEN or MARTEK casts were made. Velocity and TRA correctors were extrapolated from the velocity curve generated by the daily bar checks. Because of the strong currents in the survey area, bar checks were taken in a sheltered area west of Point Sinbad. The turbulent currents assured a thorough mixing of the water column. Therefore, the velocity curve is assumed to be linear.

Velocity correctors of 0.2 and 1.0 feet were applied to depths 0-120 and 120 and over respectively, as specified in section 4.5.7.1, table 3, Provisional Hydrographic Manual, Change No. 9, 9/29/75.

Launch DA-1 (3131), the single sounding vessel, was equipped as follows:

<u>EQUIPMENT</u>	<u>SERIAL NUMBER</u>
ROSS Fineline Recorder, Model 5000	1048
Digitizer 6000	1048
R/T Unit	1036
Hydrographic Logger, Aircraft Standards	0005

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET, FATHOMS

FORM C&GS-117
(4-62)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

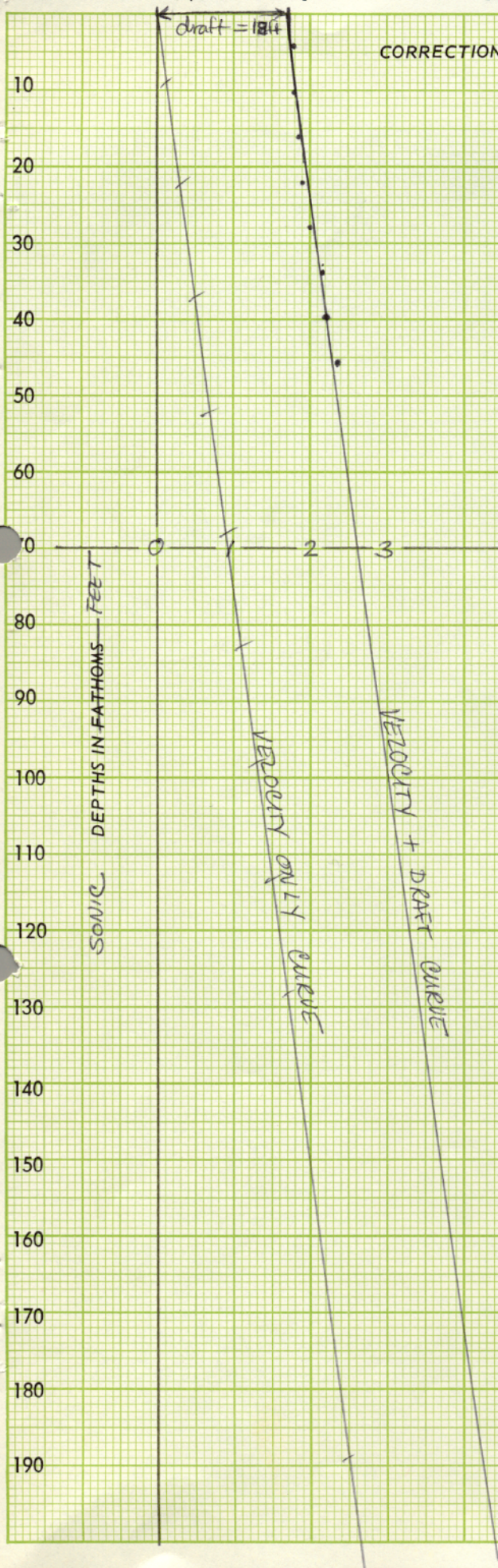
Ship VESSEL 3131
 Cdr M.H. Fleming Comdg.
 These corrections are to be used
 between OCT 16 1975 and OCT 20 1975
 in the locality SERGIUS NARROWS
PERIL STRAIT
 for hydrographic surveys Nos. SP-PMC-7-DA-75

OBSERVATION: EXTREME MIXING OF
 WATER COLUMN IN SURVEY AREA
 REQUIRES A LINEAR CURVE (HOMOGENEOUS
 WATER COLUMN) ∴ EXTRAPOLATION VALID
 FROM BAR CHECK DATA.

CORRECTION INTERVALS TO 120' 0.2 ft
 BEYOND 120' 1.0 ft

SONIC CORRECTORS:	TO DEPTH	CORRECTION
	9	0.0
	22	0.2
	37	0.4
	52	0.6
	68	0.8
	83	1.0
	98	1.2
	113	1.4
	123	1.6
	189	2.0
	284	3.0

(For deep water add a 0 to these figures)



VELOCITY CORRECTOR ABSTRACT

Sergius Narrows, Peril Strait, Alaska
SP-PMC-7-DA-75

DA-1 (3131) (feet)

<u>CORRECTOR</u>	<u>APPLICABLE DEPTH</u>
0.0	9
0.2	22
0.4	37
0.6	52
0.8	68
1.0	83
1.2	98
1.4	113
1.6	123
2.0	189
3.0	284

BAR CHECK AVERAGES

Sergius Narrows, Peril Strait, Alaska
SP-PMC-7-DA-75

DA-1 (3131) (feet)

<u>TRUE</u>	<u>SONIC</u>	<u>TRUE - SONIC</u>
6.0	4.2	+1.8
12.0	10.2	+1.8
18.0	16.1	+1.9
24.0	22.1	+1.9
30.0	28.0	+2.0
36.0	33.8	+2.2
42.0	39.8	+2.1
48.0	45.6	+2.4

TRANSDUCER DRAFT MEASUREMENT

Sergius Narrows, Peril Strait, Alaska
SP-PMC-7-DA-75

<u>VESSEL</u>	<u>DAY</u>	<u>TRANSDUCER DRAFT</u>
DA-1(3131)	ALL	1.8 ft.

TRANSDUCER CORRECTION ABSTRACT

TRA (TC/TI) TAPE: VESSEL DA-1(3131) SURVEY SP-PMC-7-BA-75 FATHOMETER S/N 1048 YR 1975 ~~PAGE~~ 1 OF 1

[illegible]

LATTICE REQUEST

Form CPM 32-2 (1 31/

H- OPR SP-PMC-7

Field No. **DA-5-1-75**

Requested by _____

Date Required _____

Station Numbers		R-R Sector Description for Plotting				Pen	Station Name
STA 1	STA 2	CEN. \angle	SECTOR ARC $^{\circ}$	MIN RATE	MAX RATE	Color	Plot Lattice On Overlays
001			025, 090 000, 160	500	3000 2000	Green	ILand
002			305, 000 365, 170	500	2500	Red	Cabal
008			275, 335	500		blue	she 2

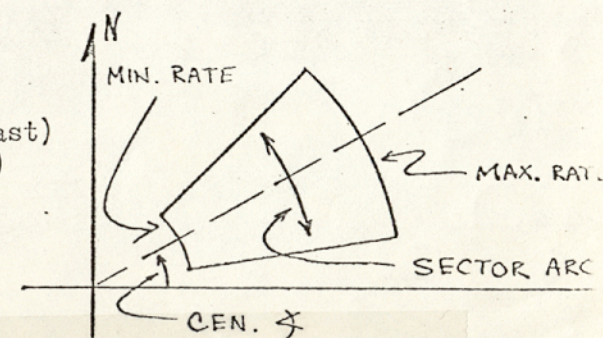
STA 2 will be blank for R/R; slave if Hyperbolic

CEN. \angle Central angle of R-R sector to be plotted (in degrees CCW from East)

SECTOR ARC° degrees of R-R arc sector to be plotted (blank implies 360°)

MIN RATE to be plotted to two decimals (blank implies 0)

MAX RATE to be plotted to two decimals (blank implies infinity)



SP-PMC-7-DA-75
DA-5-1-75

PARAMETER TAPE

FEST=3000
CLAT=6360000
CMER=135/38/00
GRID=15
PLSCL=5000
PLAT=57/23/15
PLON=135/39/45
VESNO=3131
YR=75
ANDIST=00.0

0.21520

SP-PMC-7-DA-75

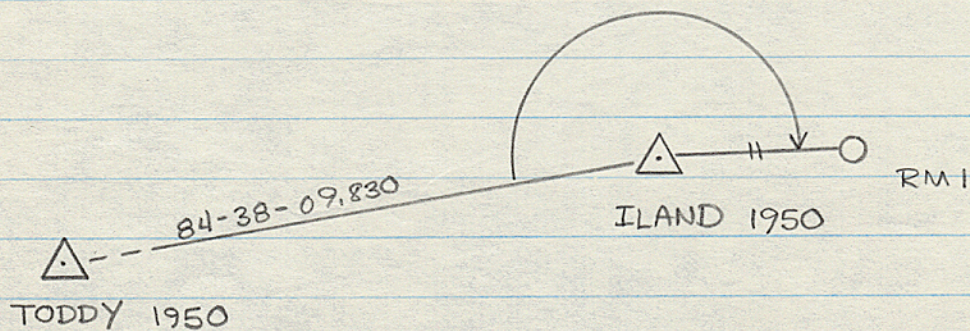
DA-5-1-75

SIGNAL LIST

001	7	57	23	53272	135	39	25494	250	0000	000000	ILAND RM 1,1950
002	7	57	23	35376	135	37	46238	250	0000	000000	CABAL,1950
003	1	57	24	20757	135	39	02303	139	0000	000000	BOONE 2,1950
004	1	57	24	27713	135	37	57296✓	139	0000	000000	SERGIUS 2,1950
005	7	57	24	03341	135	37	53408	139	0000	000000	CRAG,1895-1950
006	1	57	24	35840	135	37	22469	139	0000	000000	SHOAL 2,1950
007	7	57	24	33054	135	36	17929	139	0000	000000	MOUNTAIN 2,1950
008	6	57	24	13633	135	36	49585	250	0000	000000	SHE 2,1950
009	3	57	23	25643	135	38	52639	139	0000	000000	SULOIA 2,1950
010	3	57	24	28853	135	37	45153	139	0000	000000	SERGIUS NARROWS LT,1950

SP-PMC-7-DA-75

ILAND 1950 RMI G.P. COMPUTATION



ILAND - TODDY AZIMUTH

84 - 38 - 09.830

DIRECTION

184 - 32 - 10.000

ILAND - RMI AZIMUTH

269° 10' 19.830"

ILAND - RMI DISTANCE = 29.92 ft = 9.120 m

*
QUADRANT(NE/NW/SE/SW)?NW

DIRECT OR INVERSE(D/I)?I

INVERSE COMPUTATION

FROM STATION = ILAND 1950

LATITUDE = 57/23/53.268 ✓
LONGITUDE = 135/39/26.040 ✓

TO STATION = TODDY 1950

LATITUDE = 57/23/50.631 ✓
LONGITUDE = 135/40/18.003 ✓

DISTANCE = 871.674

FWD AZIMUTH = 84/38/09.830 ✓

BACK AZIMUTH = 264/37/26.055

FROM STATION =

QUADRANT(NE/NW/SE/SW)?NW

DIRECT OR INVERSE(D/I)?D

DIRECT COMPUTATION

FROM STATION = ILAND 1950

LATITUDE = 57/23/53.268

LONGITUDE = 135/39/26.040

DISTANCE = 9.12

FWD AZIMUTH = 269/10/19.830

TO STATION = RM 1

LATITUDE = 57/23/53.2722

LONGITUDE = 135/39/25.4940

BCK AZIMUTH = 89/10/20.2899

✓'d JDS / 4
VIA WANG.

FROM STATION =

ABSTRACT OF POSITIONS SP-PMC-7-DA-75

CONTROL: RANGE/RANGE

VESSEL: 3131

<u>DAY</u>	<u>POSITIONS</u>	<u>CTRL</u>	<u>S1</u>	<u>M</u>	<u>S2</u>	XPONDER CODE	
						<u>S1</u>	<u>S2</u>
289	2001-2131*	04	002	--	001	2	3
290	2132-2292*	04	002	-	001	2	3
291	2293-2367*	04	002	-	001	2	3
	2368-2387*	04	008	-	001	4	3
292	9601-9602**	04	002	-	001	2	3
	2388-2427*	04	008	-	001	4	3
	9603-9604**	04	008	-	001	4	3

CONTROL: VISUAL

VESSEL: 3131

<u>DAY</u>	<u>POSITIONS</u>	<u>CTRL</u>	<u>S1</u>	<u>M</u>	<u>S2</u>
289	2001-2126* ,	01	--	VIS	--
290	2132-2292*	01	--	VIS	--
291	2293-2387*	01	--	VIS	--
292	2388-2427*	01	--	VIS	--
	9601-9604**	01	--	VIS	--

* Hydro

** Detached Positions

' No positions 2127-2131

SERGIUS NARROWS
ELECTRONIC CONTROL NOTE

INTRODUCTION

Survey SP-PMC-7-DA-75 was controlled by MINIRANGER in addition to visual methods. We recommend MINIRANGER be used for smooth plotting.

The project area was excellently suited for MINIRANGER control. The survey was run during times when little, if any shoreline was exposed. The survey area is heavily wooded and provided no reflective surfaces. As a result no multipath returns were encountered and MINIRANGER data was clean with very few anomalies.

Maximum ranges were under one mile. Strong signals were received throughout the survey area. Stations were selected to provide near 90 degree arc intersections to improve fix accuracy. Line of sight requirements were met everywhere.

BASELINE CALIBRATIONS

Baseline calibrations were accomplished per PMC OPORDER instructions. Two calibrations were made; one prior to beginning this project, and one following its completion. The first calibration was made at Ketchikan, Alaska on 10 October 1975. This calibration was made from the Coast Guard pier, across water, to a site approximately 1800 meters away on Pennock Island. The baseline was measured using Tellurometer model CA-1000's. The second calibration was made after return to Seattle on 28 October at Sand Point. This calibration was entirely across land. The results of these calibrations are tabulated below. The maximum difference between beginning and ending calibration correctors is three meters--within accuracy requirements and the repeatability of the MINIRANGER system. The system functioned well. Field calibration checks agreed excellently with mean baseline calibration correctors.

FIELD CALIBRATION CHECKS

All field calibration checks confirmed the accuracy and stability of equipment. Calibrations were taken before and after each day's hydro.

Visual three-point sextant fixes with check angles were observed simultaneously with MINIRANGER patterns to obtain

calibration correctors. All DCC's are within two meters of the mean of DCC's which agrees within one meter of the mean correctors obtained from baseline calibrations.

Several detached positions were taken at points within the survey area. These simultaneous visual/miniranger fixes agree excellently and substantiate daily calibration checks.

BASELINE CALIBRATIONS SUMMARY

<u>Console/R-T</u>	<u>Code</u>	<u>BLC 10/10/75</u>	<u>BLC 10/28/75</u>	<u>DIFF</u>	<u>MEAN</u>
716/709	1	3	3	0	3
	2	0	2	2	1
	3	1	1	0	1
	4	-1	-1	0	-1
707/721	1	2	3	1	2
	2	0	1	1	1
	3	-1	0	1	0
	4	-2	0	2	-1
710/719	1	1	2	1	2
	2	-2	0	2	-1
	3	-3	0	3	-2
	4	-2	-2	0	-2

ABSTRACT OF DAILY CALIBRATION CHECKS*

Calibration No. -----	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>Mean</u>
CODE 2	-2	-2	-2	x	-3	-1	x	-2
CODE 3	-1	-2	-2	-2	-3	0	0	-2
CODE 4	x	x	x	-2	x	x	-3	-2

*Only unit 710/719 and codes 2,3, and 4 were used for this survey.

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 3131

SHEET : DA-5-1-75

TIME	DAY	PATTERN 1	PATTERN 2
164900	289	-00001	-00002
180900	291	-00001	-00002
190600		-00002	-00002
173612	292	-00001	-00002
201858		-00002	-00002
235959	300	-00002	-00002

*Calibration data
filled with figures*

LOAD PARAMETERS
FEST=3000
CLAT=6360000
CMER=135/38/00
GRID=15
PLSCL=5000
PLAT=57/23/15
PLON=135/39/45
VESNO=3131
YR=75
ANDIST=00.0

ANY SIGNALS(Y/N)Y

LOAD SIGNALS

FUNCTION = 7

ELECTRONIC STATIONS(S1,M,S2)= 8,0,1

SIGNALS(L,C,R)= 7,5,9

ANGLE 1 = 38/29/
ANGLE 2 = 58/20/

X = 2120.373
Y = 4833.698

PATTERN 1= 2076.12
PATTERN 2= 1072.06

LATITUDE = 57/24/23.079
LONGITUDE= 135/38/52.682

SIGNALS(L,C,R)= 4,5,9

ANGLE 1 = 40/35/
ANGLE 2 = S

X = 2123.138
Y = 4834.115

PATTERN 1= 2073.44
PATTERN 2= 1073.84

LATITUDE = 57/24/23.093
LONGITUDE= 135/38/52.516

SIGNALS(L,C,R)= 7,5,9

ANGLE 1 = 38/28/
ANGLE 2 = 58/23/

X = 2120.604
Y = 4832.542

PATTERN 1= 2075.73
PATTERN 2= 1071.19

LATITUDE = 57/24/23.042
LONGITUDE= 135/38/52.668

SIGNALS(L,C,R)= 4,5,9

ANGLE 1 = 40/36/
ANGLE 2 = S

X = 2122.969
Y = 4832.901

PATTERN 1= 2073.44
PATTERN 2= 1072.71

LATITUDE = 57/24/23.053
LONGITUDE= 135/38/52.526

SIGNALS(L,C,R)= 7,2,9

ANGLE 1 = 59/53/
ANGLE 2 = 36/55/

X = 2120.445
Y = 4834.574

PATTERN 1= 2076.17
PATTERN 2= 1072.85

LATITUDE = 57/24/23.108
LONGITUDE= 135/38/52.677

SIGNALS(L,C,R)= 8,2,9

ANGLE 1 = 45/02/
ANGLE 2 = S

X = 2123.743
Y = 4835.884

PATTERN 1= 2073.09
PATTERN 2= 1075.67

LATITUDE = 57/24/23.150
LONGITUDE= 135/38/52.480

SIGNALS(L,C,R)=

FUNCTION = 7

ELECTRONIC STATIONS(S1,M,S2)= 2,0,1

SIGNALS(L,C,R)= 7,5,9

ANGLE 1 = 38/28/

VELOCITY TAPE & PRINTOUT

SP-PMC-7-DA-75

DA-5-1-75

000090 0 0000 0001 000 313100 050175
000220 0 0002
000370 0 0004
000520 0 0006
000680 0 0008
000830 0 0010
000980 0 0012
001130 0 0014
001230 0 0016
001890 0 0020
002840 0 0030
999999 0 0030

SP-PMC-7-DA-75
DA-5-1-75

CONS. VISUAL CORRECTOR TAPE & PRINTOUT

235959 3 0018 3131 365 000000 000000 0000 000 000

OFFICER IN CHARGE COMMENTS

DAY # LAUNCH COMMENTS AND INITIALS OF OIC

289	3131	<ul style="list-style-type: none"> - mini-ranger control / with visual XS recorded - start hydro south END; not much of a slack water! - different strength currents on some line, thus fixes in center (near strongest current) tend to get pushed / or spread out. - At North end ran into opposing currents; near channel current would flood and from shore you crossed into an eddy and picked up a current going the opposite direction - calibrated off of buoy "C" - Worked E. Francis Rk. ME
289/290		
289/290	3131	<p>pm: continue work in reasonably slack waters at south end - worked w. Francis Rk</p> <ul style="list-style-type: none"> - rain, hail - no beachhead or col. - see day 289 AM ME
290	3131	<ul style="list-style-type: none"> - Completed main scheme - Run two visual lines through channel - received one mini-ranger rate for another ✓ - Attempted X-lines - too much + varying currents ME
291	3131	<ul style="list-style-type: none"> - Splits over pinnacles + cross lines - Some lines in channel; too much current to complete ME
292	3131	<ul style="list-style-type: none"> DPs DPs on buoy 6 + 8 DPs on W. Francis Rk DPs on pinnacle ^{near} channel DPs Sounding lines in channel ME

TRA TC/II TAPE PRINTOUT
SP/PMC-7-DA-75
DA-5-1-75

H07075

VESSEL 3131

000000 0 0018 0001 289 000000 000000
000000 0 0018 0001 293 000000 000000

DE NATIONAL OCEAN SURVEY 910 444 2184 NR GA

R 152125 Z OCT 75

FM LIPPOLD/NOS/NOAA/SEATTLE

TO C.O. NOAA SHIP DAVIDSON/WTEK VIA NO. 5

BT

UNCLAS

DA-124 LEVEL REQUIREMENTS IN ITEM 7, PROJECT INSTRUCTIONS
SP-7, PERIL STRAIT SHOULD BE CHANGED TO READ: LEVELS TO THREE BENCH
MARKS WILL BE SUFFICIENT IF DIFFERENCES IN ELEVATIONS ARE IN
AGREEMENT WITH THE PUBLISHED DIFFERENCES IN ELEVATION.

BT

ALZ. C. L. Brumby
CHIEF, OPERATIONS

H. R. Lippold, Jr.
H. R. LIPPOLD, JR., DPMC

CC: CPM X2 1 DA RADIO

NOAA SHIP DAVIDSON
CPM 115

OCT 23 1975

OUTGOING
10/16/75

986

Sent: 15/2235Z / Max / KVS /

NOTICE TO MARINERS MARINE INFORMATION REPORT AND SUGGESTION SHEET

Observer NOAA SHIP DAVIDSON CSS-31 Survey Personnel
p's Name NOAA SHIP DAVIDSON Master/Commanding Officer M.H. FLEMING, CDR NOAA
Mailing Address EPO SEATTLE, WASHINGTON 98795
Date of Observation 19 October 1975 Time of Observation (GMT) 2152
Position: Lat. 57° 24' 23.7"N Long. 135° 37' 48.6"W
Charts affected (Nationality) NOS 17323 Ed. No. 6th Dec. 7/74
Corrected thru N.M. 42 of 19 75

Details of Information Reported. (Continue on reverse side—Use additional sheets if necessary—
Include suggestions for improving navigational publications, charts, and services.)

SERGIUS NARROWS CHANNEL---HAZARD TO NAVIGATION

Shoal rock of 18 ft MLLW found during survey operations.
Depth reduced for observed tides to MLLW.
One hour search of area using fathometer and leadline.

WITHIN LIMITS OF CHARTED 24 FOOT CHANNEL.

Approximately in line with buoys N"8" and N"6"

Above latitude and longitude based on existing triangulation.
Geodetic Position accurate to within one meter.

MAILING INSTRUCTIONS

Please mail this form together with other available material, to the proper U.S. Government Agency, as follows:

Agency

Information Affecting

Defense Mapping Agency
Hydrographic Center
Washington, D.C. 20390
Attention Code NVI

Charts and publications produced by DMA Hydrographic Center
for foreign coasts and waters.

U.S. Coast Guard
Washington, D.C. 20590
Attention Station GWAN-4/74

Aids to Navigation in U.S. waters.

National Ocean Survey
Rockville, Maryland 20852

Charts and publications produced by National Ocean Survey
for U.S. Coasts and waters, including U.S. Territories.

NOTICE TO MARINERS MARINE INFORMATION REPORT AND SUGGESTION SHEET

Observer NOAA SHIP DAVIDSON CSS-31
Ship's Name NOAA SHIP DAVIDSON Master/Commanding Officer M.H. FLEMING, CDR, NOAA
Mailing Address 1801 Fairview Ave East, Seattle, WA 98102
Date of Observation Oct 18, 1975 Time of Observation (GMT) 1735
Position: Lat. 57 24.3' N Long. 135 38.3' W
Charts affected (Nationality) NOS #17323 Ed. No. 6, Dec 7, 1974
Corrected thru N.M. 42 of 19 75

Details of Information Reported. (Continue on reverse side—Use additional sheets if necessary—
Include suggestions for improving navigational publications, charts, and services.)

WEST FRANCIS ROCK

BUOY N '6' OUT OF CHARTED POSITION. NEW LOCATION IS:
57° 24' ^{17.2}_{17.8}" N, 135° 38' ^{18.7}_{15.9}" W.

SERGIUS NARROWS CHANNEL

BUOY N'8' OUT OF CHARTED POSITION. NEW LOCATION IS:
57° 24' 25.9" N, 135° 37' 41.2" W.

POSITIONS WERE DETERMINED BY VISUAL SEXTANT FIXES (WITH CHECK
ANGLE) USING LOCAL HORIZONTAL CONTROL. OBSERVATIONS WERE MADE
IN A 1.5 kt FLOOD CURRENT.

MAILING INSTRUCTIONS

Please mail this form together with other available material, to the proper U.S. Government Agency, as follows:

Agency

Information Affecting

Defense Mapping Agency
Hydrographic Center
Washington, D.C. 20390
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Aids to Navigation in U.S. waters.

National Ocean Survey
Rockville, Maryland 20852

Charts and publications produced by National Ocean Survey
for U.S. Coasts and waters, including U.S. Territories.

Outgoing Fax Msg. # 266 1/16/76
Please deliver to Capt. Houlder C 32

NOTICE TO MARINERS

Final Review of the 1975 survey of Sergius Narrows/West Francis Rock, Alaska has been completed by National Ocean Survey, NOAA. The following shoal soundings are indicated:

Sergius Channel	15 ft.	57°24'23.81"	135°37'48.57"
East Francis Rock	12 ft.	57°24'06.99"	135°38'07.46"
West Francis Rock	16 ft.	57°24'16.82"	135°38'13.26"

NOS does not consider the investigation sufficiently complete to conclusively rely on the West Francis Rock 16 ft. depth. In the interest of safe navigation, the depth over West Francis Rock should be considered to be $1\frac{1}{4}$ fathoms, which was the charted depth prior to June 30, 1973, pending a conclusive investigation.

Note: Copy passed to CG 17, Juneau

LIST OF SEPARATES FOLLOWING TEXT:

Approval Sheet

Index of Field Data

Field Tide Note

Velocity Correctors Note

Velocity Curve/Corrector Abstract

Bar Check Averages

TC/TI Abstracts

Transducer Measurement

HYPLT Parameter p.o.'s

Projection Request form CPM-32-1

Lattice Request form CPM 32-2

List of Stations

GP Computation, ILAND 1950 RM 1

Abstract of Positions

Electronic Control Note and Daily Calibration Checks

Electronic Correctors Abstract

Abstract of Tides Requirements

TC/TI Tape p.o.'s

Velocity Tape p.o.'s

Visual Corrector p.o.

OIC Comments

Project Instructions SP-PMC-7-DA-75

PMC Radio Message R152125Z

Notice to Mariners Information Sheets

Detached Position Computations

INDEX OF FIELD DATA

Serguis Narrows, Peril Strait, Alaska

SP-PMC-7-DA-75

Data

- 4 ea. Original Printouts, Electronic, Logger
- 3 ea. Printouts, Visual, Logger
- 4 ea. Printouts, Electronic, Smooth Master
- 4 ea. Printouts, Visual, Smooth Master
- 4 ea. Fathograms
- 2 ea. Sounding Volumes, Original Visual Data Record
- 5 ea. Electronic Master Tapes
- 5 ea. Visual Master Tapes
- 1 ea. Electronic Corrector Tape and P.O.
- 1 ea. Visual Corrector Tape and P.O.
- 1 ea. Parameter Tape and P.O. (1:5,000)
- 1 ea. Parameter Tape and P.O. (1:2,500)
- 1 ea. ASCII Signal Tape and P.O.
- 1 ea. Velocity Tape and P.O.
- 1 ea. TRA TC/TI Tape and P.O.

*parameter cards
with figs*

Boatsheets

- 2 ea. Smooth Field Sheet (1:5,000), DA-5-1A-75, DA-5-1B-75
- 1 ea. Field Sheet (1:2,500)

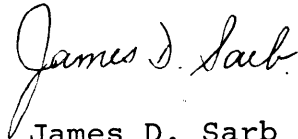
Miscellaneous

- 1 ea. Graph, Tide Reducers illustrating predicted versus observed tide curves

APPROVAL SHEET

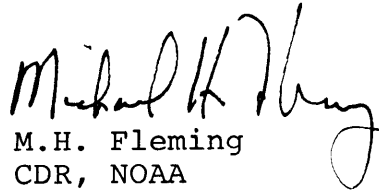
This survey was done under my command,
and frequent examinations were made of
the field sheet and all field records.

Submitted by:



James D. Sarb
LTJG, NOAA

Approved by:



M.H. Fleming
CDR, NOAA

11/20/75

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for Form 362

Tide Station Used (NOAA Form 77-12): Sergius Narrows
Point Sinbad

Period: October 15-19, 1976

HYDROGRAPHIC SHEET:

OPR: SP-PMC-7-DA-75

Locality: Peril Strait

	Sergius Narrows	11.2 ft.
Plane of reference (mean lower low water):	Point Sinbad	8.5 ft.

Height of Mean High Water above Plane of Reference:

Sergius Narrows	12.4 ft.
Point Sinbad	9.8 ft.

Remarks: Recommended zoning:

- (1) West of $135^{\circ}37'.7$ zone direct on Point Sinbad.
- (2) East of $135^{\circ}37'.7$ zone direct on Sergius Narrows.

James R. Hubbard
Chief, Tides Branch

CONTROL FOR: C07075

DATE OF LISTING: 12-19-75

GEOGRAPHIC POSITIONS IN DEGREES, MINUTES, AND SECONDS

RECORD NUMBER	YR	STA NUM	CARTO CODE	LABEL ANGLE	VECTOR DISP.	PLOT CODE	NAME	STATION HEIGHT	FREQUENCY (KHZ)	LATITUDE -(S)	LONGITUDE -(E)
1	75	1	250	307.00	.60	0	ISLAND RM 1, 1950	0.0	149835.00	57 23 53.270	135 39 25.490
2	75	2	250	307.00	.60	0	CABAL, 1950	0.0	149835.00	57 23 35.370	135 37 46.230
3	75	3	139	41.00	2.60	0	BOON 2, 1950	0.0	0.00	57 24 20.750	135 39 2.300
4	75	4	139	82.00	2.10	0	SERGIUS 2, 1950	0.0	0.00	57 24 27.710	135 37 57.300
5	75	5	139	210.00	4.00	0	CRAG, 1895-1950	0.0	0.00	57 24 3.340	135 37 53.410
6	75	6	139	33.00	2.30	0	SHOAL 2, 1950	0.0	0.00	57 24 35.840	135 37 22.470
7	75	7	139	307.00	.60	0	MOUNTAIN 2, 1950	0.0	0.00	57 24 33.050	135 36 17.930
8	75	8	250	193.00	5.60	0	SHE 2, 1950	0.0	149835.00	57 24 13.630	135 36 49.590
9	75	9	139	187.00	1.78	0	SULOIA 2, 1950	0.0	0.00	57 23 25.640	135 38 52.640
10	75	10	139	90.00	4.00	0	SERGIUS NARROWS LT, 1950	0.0	0.00	57 24 28.850	135 37 45.150
11	75	20	243	307.00	.60	0		0.0	0.00	57 24 35.800	135 37 22.500
12	75	21	243	307.00	.60	0		0.0	0.00	57 24 21.000	135 39 2.000

39'

38'

50" 40" 30" 20" 10" 135° 37' 50"

36'

Correction to Chart C & G S 8248

SERGIUS NARROWS

PERIL STRAIT

Scale 1:20,000

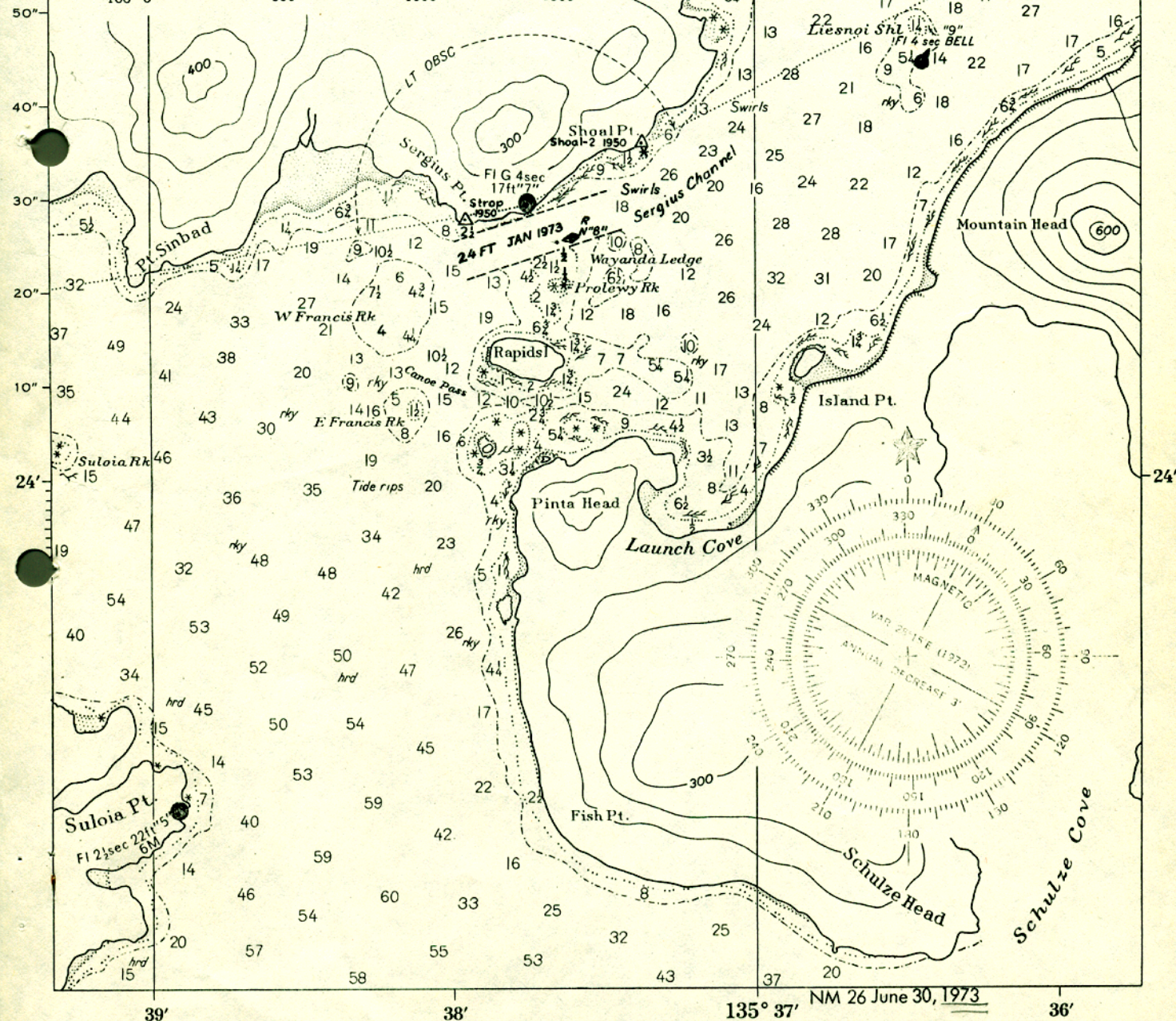
57°
25'57°
25'

Nautical Mile

1/2

Yards

100 0 500 1000 1500



NM 26 June 30, 1973

Cht 8252



HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. ~~SP-100-104-075~~ FE No. 22 (1976)

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET & PNO		1	BOAT SHEETS		2	
DESCRIPTIVE REPORT		1	OVERLAYS		2	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	1 & Misc. Data		w/Tide Correctors			
VOLUMES	2					
BOXES						

T-SHEET PRINTS (List)
None

SPECIAL REPORTS (List)
None

OFFICE PROCESSING ACTIVITIES
The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				1060
POSITIONS CHECKED		1060		
POSITIONS REVISED		2		
DEPTH SOUNDINGS REVISED		115		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		-		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		2		
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS		4		
JUNCTIONS		31		
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS		107		
SPECIAL ADJUSTMENTS		18		
ALL OTHER WORK		59		
TOTALS		219		
PRE-VERIFICATION BY James Green		BEGINNING DATE 11/13/75	ENDING DATE 11/13/75	
VERIFICATION BY Richard D. Lynn		BEGINNING DATE 11/14/75	ENDING DATE 11/15/76	
REVIEW BY		BEGINNING DATE	ENDING DATE	

QC Inspection 7/16/76 15 hr

VERIFIER'S REPORT

HYDROGRAPHIC SURVEY, H SP-PMC-7-DA-75

INSTRUCTIONS - This form serves to identify items of a check list in verification together with items which are separately reported to the Reviewer. The form is not to be forwarded to the Reviewer. A report, which is prepared for the Reviewer, should identify items by number and letter and will be filed in the Descriptive Report until the survey is reviewed.

CL - Check List Items: should be checked as having been completed during the verification processes.

R - Report Item: This column refers to those items reported to the reviewer and is used to indicate the items discussed.

Part I - DESCRIPTIVE REPORT	CL	R	Part III - JUNCTIONS (Continued)	CL	R
Note: The verifier should first read the Descriptive Report for general information and problems. 1. The Descriptive Report was consulted, paragraphs checked if found satisfactory, and notations were made in soft black pencil regarding action taken. Remarks Required: -- None	X		10. Junctions with contemporary surveys were satisfactory except as follows: Remarks Required: -- Consider conditions after adjustments have been made; note adjustments made. Make special notes of Butt junctions and areas which are SUPERSEDED .	X	
2. Soundings originating with the survey and mentioned in the Descriptive Report have been verified and checked in soft black pencil, including latitude and longitude, together with position identification. Remarks Required: -- None	X		Part IV - VOLUMES 11. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken and exceptions noted in the volumes. Remarks Required: -- None	X	
3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year. Remarks Required: -- None	X		12. Condition of sounding records was satisfactory except as follows: Remarks Required: -- Mention deficiencies in completeness of notes or actions for the following: (a) rocks (b) line turns (c) position values of beginning and ending of lines (d) bar check or velocity correctors (e) time recording (f) notes or markings on fathograms (g) was reduction of soundings accurately done? (h) was scanning accurate? (i) were peaks at uneven intervals missed? (j) were stamps completed? (k) references to adjacent features	X	
Part II - SHORELINE AND SIGNALS 4. Source of shoreline signals Remarks Required: -- List all surveys a. Give earliest and latest dates of photographs b. Field inspection date c. Field Edit date d. Reviewed-Unreviewed	NA				
5. The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography. Remarks Required: -- Discuss remaining differences.	X				
6. The plotting of all triangulation stations, topographic stations and hydrographic signals has been checked and noted in processing stamp No. 42 on the smooth sheet. Remarks Required: -- None	X				
7. Objects on which signals are located and which fall outside of the high-water line have been described on the sheet. Remarks Required: -- List those signals still unidentified.	X		Part V - MACHINE PLOTTING 13. All positions verified instrumentally were check marked in color in the sounding records, and verifier initialed the processing stamp. Remarks Required: -- None	X	
Part III - JUNCTIONS Note: Make a cursory comparison preliminary to inking soundings in area of overlap. 8. All junctions of contemporary or overlapping sheets were compared and overlapping curves were made identical. Remarks Required: -- None	X		14. The plotting of all unsatisfactory crossings was verified. Remarks Required: -- None	X	
9. The notation in slanted lettering "JOINS H--- (19)" was added in colored ink for all verified contemporary adjoining or overlapping sheets. Those not verified are shown in pencil. Remarks Required: -- None	X		15. All detached positions locating critical soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible. Remarks Required: -- None		III

Part V - PROTRACTING (Continued)	CL	R	Part VIII - AIDS TO NAVIGATION	CL	R
16. The protracting was satisfactory except as follows: Remarks Required: -- Refers to protracting in general except for specific faults repeated often, or faults in control information, which required considerable replotting or adjustments.	NA		26. All fixed aids located together with those on the contemporary topographic sheets, have been shown on the survey. Remarks Required: -- Conflicts of any nature listed.	X	
17. The protractor has been checked within the last three months. Remarks Required: -- Date of check, type of protractor and number.	NA		27. All floating aids listed in the Descriptive Report should be verified and checked in soft black pencil, including latitude and longitude and position identification. Remarks Required: -- None		VII
Part VI - SOUNDINGS 18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings. Remarks Required: -- None	NA		Part IX - BOAT SHEET 28. The boat sheet was constantly compared with the smooth sheet with reference to notes, position of sounding lines and supplemental information. Remarks Required: -- None	X	
19. Sounding line crossings were satisfactory except as follows: Remarks Required: -- Discuss adjustments.	X		29. Heights of rocks awash were correctly reduced and compared with topographic information. Remarks Required: -- Note excessive conflicts with topographic information.	X	
20. The spacing of soundings as recorded in the records was closely followed; Remarks Required: -- None	X		Part X - GENERAL 30. All information on the sheet is shown in accordance with figures 82 and 83 in the Hydrographic Manual (Pub. 20-2). Remarks Required: -- None	X	
21. The scanning, reduction, spacing, plotting of questionable soundings have been verified. Remarks Required: -- None		III	31. Unnecessary pencil notes have been removed from the sheet. Remarks Required: -- None	X	
22. The smooth plotting of soundings was satisfactory except as follows: Remarks Required: -- Refer to legibility, errors in spacing, and errors in numbers - but not to errors in scanning.	X		32. Degree, minute values and symbols have been checked; also electronic distance arcs have been properly identified and checked on the smooth sheet. Remarks Required: -- None	X	
Part VII - CURVES 23. The depth curves have been inspected before inking. Remarks Required: -- By whom was the penciled curves inspected.		III	33. The bottom characteristics are adequately shown. Remarks Required: -- None	X	
24. The low-water line and delineation of shoal areas have been properly shown in accordance with the following: a. From T-Sheet in dotted black lines b. From soundings in orange c. Approximate position of sketched curve is dashed orange d. Approximate position of shoal area not sounded in black dashed Remarks Required: -- None	X		Part XI - NOTES TO THE REVIEWER 34. Unresolved discrepancies and questionable soundings.		IX
25. Depth curves were satisfactory except as follows: (This statement should not refer to the manner in which the curves were drawn). Remarks Required: -- Indicate areas where curves could not be drawn completely because of lack of soundings. For some inshore areas a general statement is sufficient.	X		35. Notation of discrepancies with photogrammetric survey inserted in report of unreviewed photogrammetric survey or on copy.	NA	
			36. Supplemental information.		X
Verified by <i>Richard D. Lynn</i> Richard D. Lynn, Cartographic Technician			Date 1/15/76		

VERIFIER'S REPORT

DA-5-1-75

SP-PMC-7-DA-75

This survey was verified and plotted at the Pacific Marine Center, Seattle, Washington. Information relating to this survey is provided as specified in Chapter 6 of the Provisional Hydrographic Manual.

I. INTRODUCTION

This special investigation of Sergius Narrows, Peril Strait, Alaska, was intended at 1:5,000 scale; however, because of the large amount of data collected, the smooth sheet has been compiled at 1:2,500. No major problems were encountered in accomplishing this survey not already addressed in the Ship's Report. There were changes made in the Tide Stations mentioned in Section X of this report. The ship's TC/TI tape was changed from 0.3 of a fathom to read 1.8 feet.

II. CONTROL AND SHORELINE

The horizontal control has been adequately described in Sections F and G of the Descriptive Report.

As stated in Section H of the Descriptive Report, there is no shoreline manuscript available.

III. HYDROGRAPHY

The soundings at crossings appear to be in good agreement. Depth contours could be drawn adequately for delineation of the bottom and were checked before inking by Mr. Stanley H. Otsubo, Cartographic Technician.

As for the determination of least depth, there could possibly be a deficiency in the area of West Francis Rock. This is discussed in great length in Section P. Miscellaneous, West Francis Rock, page 7 of the Descriptive Report. It states that the least depth on West Francis Rock was located by D.P. #9602. However, a study of the fathogram at this location displays a trace that is next to impossible to read with any degree of assurance. In rescanning the fathograms, an "in-between" sounding was scanned on day 291 which reduces to 16.6 ft. at Pos. #231601. There are two Pos. #'s 231601, but the time on this shoal sounding is 171505. This is the shoalest sounding found in this area and is plotted as 16 ft. on the smooth sheet at Lat. 57°24'16.8" and Long. 135°38'13.3". There is a 30 ft. shoal in 37' to 43' of water approximately 65 meters west southwest of the above mentioned shoal. This is located at Pos. #231801 at Lat. 57°24'16.4" and Long. 135°38'17.0".

~~16 is supported
by 18' of
next crossing
of feature
which was
rejected~~
These shoal
depths are
discredited
by divers' inves-
tigation in
FE, 3(1976)

On East Francis Rock, there is a shoal of 12.2 ft. which plots as a 12-foot sounding. This sounding is at Pos. #229402, Day 292 at Lat. 57°24'07.2" and Long. 135°38'06.4".

Just 57 meters northwest of the above mentioned location is a 24-foot sounding at Pos. #204702 on Day 289.

The 24-foot dredged channel in Sergius Narrows is clear at this depth according to this survey. However, approximately 10 meters outside the ^{shoal} channel is a 15-foot shoal which was located *NDL* by a detached position #9604 on Julian Day 292 at Lat. 57°24'23.8" and Long. 135°37'48.6". This is on the southern side of the channel and should be given respectful clearance.

IV. CONDITION OF SURVEY

The condition of this survey is adequate. The scale has been changed to 1:2,500 as previously noted and due to circumstances mentioned in Section Q of the Descriptive Report, the MINI-RANGER control has been accepted over the visual.

V. JUNCTIONS

There are no junctions required with this survey.

VI. COMPARISON WITH PRIOR SURVEYS

Because of the dredging and blasting since H-7930 (PA-05251) 1:5,000, was surveyed, a detailed comparison was not made.

VII. COMPARISON WITH CHART

In going through the Notice to Mariners, the following information has been gathered in reference to Chart #17323, 6th Ed., December 7, 1974, 1:40,000 comparison with R"6" and shoal.

<u>Date</u>	<u>Notice No.</u>	<u>Remarks</u>
12 Jan 1972	02	Drilling and blasting in vicinity of West Francis Rock by Wayne Construction Co.
19 July 1972	29	Dredging in Sergius Narrows
09 Feb 1973	03	West Francis Rock Lighted Buoy discontinued
13 Feb 1973	07	West Francis Rock Light Buoy permanently discontinued.
30 June 1973	26	A copy of chartlet without buoy and 1 1/4 fm. sounding not carried over from 1968 charts but shows hand corrected 4 fms.

<u>Date</u>	<u>Notice No.</u>	<u>Remarks</u>
Refer: Coast Pilot 8 Supplement 1 Jan 1974 changing $1\frac{1}{2}$ fm. to 4 fms.		
12 Nov 1974	46	East Francis Rock Lighted Buoy "6" established (on edge of channel) Lat. $57^{\circ}24'12''$ N and Long. $135^{\circ}38'19''$ W
14 Feb 1975	Special Notice No. 01	East Francis Rock Buoy added RA REF
29 July 1975	30	Soundings on West Francis Rock Lighted Buoy "6" reported 14-21 ft. pinnacles incorrectly charted.
23 Sept 1975	38	Leaf Kelp shows at slack 4' to 6' from top of rocks.
30 Sept 1975	39	Buoy moved from $57^{\circ}24'12''$ N, $135^{\circ}38'19''$ W to $57^{\circ}24'17''$ N, $135^{\circ}38'13''$ W.

This survey conclusively disproves the minimum depth of 4 fathoms over West Francis Rock as charted on Chart #17323 (USGS 8348) 6th Ed., Dec 7/74. It does not conclusively disprove the possibility of a $1\frac{1}{2}$ fathom minimum depth as charted on USGS 8248 4th Ed., July 29/68. It is, therefore, recommended that the previously charted $1\frac{1}{2}$ fathoms minimum sounding be reapplied to the chart.

Old survey: $1\frac{1}{2}$ fms. at Lat. $57^{\circ}24'16''$ N, Long. $135^{\circ}38'12''$ W
 New survey: 16 ft. at Lat. $57^{\circ}24'16.8''$ N, Long. $135^{\circ}38'13.3''$ W see FE. 3(76)

R "6" Buoy Location this survey: Lat. $57^{\circ}24'17.8''$ N, Long. $135^{\circ}38'15.9''$ W

VIII. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complied with the project instructions.

IX. ADDITIONAL FIELD WORK

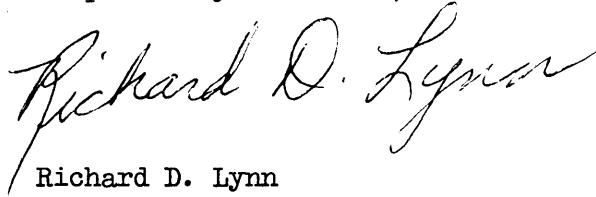
As noted in Paragraph P of the Descriptive Report, the least depth for West Francis Rock could not be conclusively established. Therefore, if "conclusive establishment" of the least depth of West Francis Rock is required, additional field work is necessary.

X. NOTES TO THE COMPILER

The Tide Gage locations given in the Descriptive Report did not agree with those plotted on the boatsheet. In conferring with Ship's Officers, the Tide Gage locations were changed to agree with the boatsheet. Sergius Narrows now plots at $57^{\circ}24'33.5''$, $135^{\circ}37'34.0''$. Point Sinbad now plots at $57^{\circ}24'22.0''$, $135^{\circ}39'01.0''$.

This office is in agreement with the opinion given on page 8 of the Ship's Descriptive Report under Section P. MISCELLANEOUS, WEST FRANCIS ROCK. This is in regard to the comparison made with this survey and the TRYCK, NYMAN and HAYES privately contracted survey of this area.

Respectfully submitted,

A handwritten signature in cursive script that reads "Richard D. Lynn". The signature is written in dark ink and is positioned above the typed name and title.

Richard D. Lynn
Cartographic Technician
December 29, 1975

APPROVAL SHEET

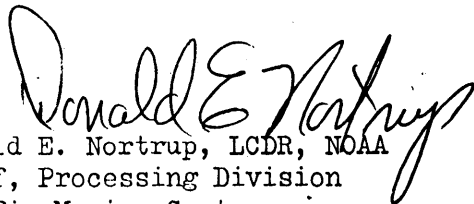
The smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual, except as noted in the Verifier's Report.

Examined and approved,



James S. Green
Supervisory Cartographic Technician

Approved and forwarded,



Donald E. Nortrup, LCDR, NOAA
Chief, Processing Division
Pacific Marine Center



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NATIONAL OCEAN SURVEY, Pacific Marine Center
1801 Fairview Ave. E., Seattle, Washington 98102

Date : 15 January 1976

Reply to Attn. of: CPM 3

To : H. R. Lippold, RADM
Director, PMC
From : Donald E. Nortrup, LCDR
Chief, Processing Division

Subject: PMC Hydrographic Survey Inspection Team Report - Sergius Narrows, Alaska

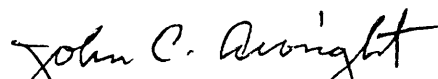
This survey is a special investigation of Sergius Narrows Channel and East and West Francis Rocks conducted by NOAA Ship DAVIDSON in October 1975 in compliance with Project Instructions SP-PMC-7-DA-75 dated 06 October 1975. Special investigation surveys are not routinely subjected to the verification process. However, this survey was verified because of sensitivity and criticality of the data.

The inspection team finds that this survey constitutes very thorough accomplishment of the Project Instructions. We concur in the verifier's decision to accept MINI-RANGER as the basic control system and to make the final plot at the scale of 1:2,500. We also concur in the evaluation of both the command and the verifier that the data is insufficient to conclude with certainty that the shoalest sounding over West Francis Rock has been determined.

The inspection team recommends that this survey be considered incomplete until such time as the minimum depth over West Francis Rock is confirmed by additional field work. In addition, it is recommended that the 1 $\frac{1}{4}$ fathom sounding charted at the site of West Francis Rock prior to 30 June 1973 be reapplied to the chart until the minimum depth is confirmed.


Donald E. Nortrup, LCDR


Dean R. Seidel, LCDR


John C. Albright, LCDR


Arnold E. Eichelberger

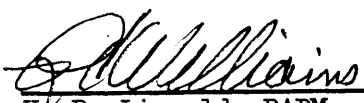
ADMINISTRATIVE APPROVAL

Special Investigation - Sergius Narrows, AK.

The smooth sheet and reports of this survey have been reviewed.

The survey is considered to be incomplete pending confirmation of the minimum depth over West Francis Rock by additional field work.

With that exception, the survey is considered adequate for charting.



for H. R. Lippold, RADM
Director
Pacific Marine Center

15 Jan 1976

Date



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C35x1

July 28, 1976

TO: *A. J. Patrick*
A. J. Patrick
Chief, Marine Surveys Division

THRU: Chief, Quality Control Branch

FROM: *R. H. Carstens*
R. H. Carstens
Quality Evaluator

SUBJECT: Quality Evaluation of F.E. 2 (1976), Sergius Narrows, Alaska

This field examination was inspected with respect to data acquisition, development of least depths and bottom configuration, adequacy of sounding line crossings, smooth plotting, verification and review, and in general was found to conform to National Ocean Survey standards and requirements.

Attention is directed to the following:

1. The least depth of 16 feet in latitude 57°24'16.8", longitude 135°38'13.1" from a graphic record of the Ross Depth Recorder is considered disproved by the diver's investigation on F.E. 3 (1976) and has been rejected. Traces from heavy kelp on the graphic record preclude a correct interpretation of the bottom profile.
2. The inability to obtain a hand lead least depth on rubble lying on the surface of West Francis Rock as reported by the hydrographer and the heavy kelp traces obscuring the bottom profile cast doubt on the certainty of the least depth determination on West Francis Rock. A subsequent diver's investigation and fathometer development on F.E. 3 (1976) have provided a more reliable least depth shown on the plot of that field examination.

CC:
C351



RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE No.2 (1976)

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

[illegible]